

CLAIMS

1. A method for replacing at least a portion of a pole (1) with a new pole part comprising the following steps:
 - a) providing support for the pole (1) so that it is held in a stable position during the subsequent steps,
 - b) dividing the pole into at least two parts (2,3) by a cut (4) which is substantially diagonal,
 - c) removing the part or parts (3) of the pole that have to be replaced,
 - d) replacing the removed part with a new pole part (3') which has at least one end portion with a diagonal cut face that matches the diagonal cut face of the remaining part or parts (2) of the pole (1),
 - e) providing several attachment devices, each extending around the circumference of the pole in the joint region, with the result that the attachment devices encircle both the original pole part (2) and the new pole part (3'), the attachment devices being distributed at intervals in the pole's longitudinal direction in the joint region in order to ensure that the diagonal cut faces of the new pole part (3') and remaining pole part(s) (2) are held together in the joint region.
2. A method according to claim 1, characterised in that the portion of the pole (1) that has to be removed and replaced respectively is the pole's lower portion and that in step d) the new pole part (3') has to be buried in the ground or attached in/to the base.
3. A method according to claim 1 or 2, characterised in that the part of the pole (1) that has to be removed and replaced respectively is the pole's middle part.
4. A method according to one of the claims 1-3, characterised in that in step a) the support for the pole is provided by means of a support device such as a support tower or a crane truck which preferably has a gripping tool (5).
5. A method according to one of the claims 1-4, characterised in that the diagonal cut (4) performed in step c) is positioned in such a manner that the ratio (D:H) of the pole's diameter (D) to the cut's height (H) is substantially kept within the range 1:15 – 1:5, preferably 1:12 – 1:7, most preferred 1:10.
6. A method according to one of the claims 1-5, characterised in that in step e) each attachment device (7) is a band-

shaped clamping ring which is fastened round the joint region after the pole parts (2,3') have been joined, or alternatively the clamping ring is placed around the new or the original pole part and then moved into position in the joint region after the pole parts have been joined.

- 5 7. A method according to one of the claims 1-6,
characterised in that at least one friction element (15), but for example 4-6, are placed between the pole parts' (2,3') cut faces in the pole joint.
- 10 8. A method according to one of the claims 1-6,
characterised in that at least one tension body (16) is attached to the attachment devices, preferably that one tension body (16) is attached to the two uppermost attachment devices at one end and to the upper pole part (2) at its other end and that a second tension body (16) is attached to the two lowest attachment devices at one end and to the lower pole part (3') at its other end.
- 15 9. A method according to one of the claims 1-7,
characterised in that an adhesive is applied to at least one of the pole parts' end portions in the pole joint.
- 20 10. A pole where at least one of the pole's (1) original portions is replaced by a new pole part (3'), the pole thereby comprising at least one remaining pole part (2) and at least one new pole part (3'),
characterised in that
- 25 - at least one of the end portions of the remaining pole part or parts (2) is in the form of a diagonal cut and at least one of the end portions of the new pole part (3') is provided where the form of the diagonal cut matches the form of the diagonal cut in the remaining pole part(s) (2), with the result that the remaining pole part(s) (2) and the new pole part (3') fit together in the joint region,
- 30 - several attachment devices, each extending around the circumference of the pole (1) are provided in the joint region with the result that the attachment devices encircle both the original pole part (2) and the new pole part (3'), the attachment devices being arranged at intervals in the pole's (1) longitudinal direction in the joint region in order to ensure that the diagonal cuts of the new pole part (3') and the remaining pole part(s) (2) are held together.
- 35 11. A pole according to claim 9,
characterised in that the attachment device is a band-shaped clamping ring (7) which preferably has an adjustable diameter and is equipped with devices for securing the clamping ring's chosen diameter.

12. A pole according to claim 9 or 10,
characterised in that the clamping ring (7) comprises a first elongated
clamping ring body (8) which is substantially circular in form, where
- the first end of the first clamping ring body (8) is arranged in slidable
abutment with the inside of the second end of the clamping ring body (8),
- the second end of the first clamping ring body (8) is provided on its
outside with a projection (9) with at least one through-going aperture
(9'),
- a plurality of through-going apertures (10) are provided at intervals
along the circumference of the first clamping ring body (8) near the first
end,
- a second clamping ring body (11) has an elongated part provided with
one or more through-going apertures (11') along the circumference of the
second clamping ring body and is provided on the outside with a projec-
tion (12) with at least one through-going aperture (12'),
- the diameter of the clamping ring (1) can be adjusted by the second
clamping ring (11) being moved between different positions along the
first clamping ring body (8) and being attached to the first clamping ring
body in the desired position by an optional number of attachment bodies
(13) each being passed through a through-going aperture (10, 11') in the
second clamping ring body (11) and in the first clamping ring body (8),
- a second attachment body (14), for example a bolt (14') with nut (14'')
is engaged in the through-going apertures (9', 12') of the two projections
(9, 12) of the first and the second clamping ring body (8, 11) respec-
tively, and can thereby be used for tightening the clamping ring (7).
13. A pole according to at least one of the claims 9-11,
characterised in that at least one friction element (15) is mounted be-
tween the pole parts' (2,3) end portions in the pole joint, the friction ele-
ment (15) preferably being provided with barbs and comprising, for ex-
ample, sun rings, strips or flat metal squares of the bulldog plate type.
14. A pole according to at least one of the claims 9-12,
characterised in that at least one tension body (16) is attached to two of
the attachment devices (7), preferably two tension bodies (16) where one
tension body is attached to the two uppermost attachment devices and the
second to the two lowest attachment devices, the tension body (16) pref-
erably being elongated and oriented in the pole's (1) longitudinal direc-
tion in such a manner that a portion of the tension body (16) extends out-
side the pole's joint region.

- 5
15. A pole according to at least one of the claims 9-13, characterised in that an adhesive is applied to at least one of the pole parts' (2, 3') end portions in the pole joint.
 16. A pole according to at least one of the claims 9-14, characterised in that 5-7 attachment devices, most preferred 6 attachment devices are employed per joint.